APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/611,180	07/06/2000	Adisak Mekkittikul	LANT-002	5596

7590 01/16/2004	EXAMINER
Wagner Murabito & Hao LLP	HO, CHUONG T
Third Floor	

ART UNIT	PAPER NUMBER
2664	

Wagner Murabito & Hao LLP
Third Floor
Two North Market Street
San Jose, CA 95113

DATE MAILED: 01/16/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	09/611,180	MEKKITTIKUL ET AL.
	Examiner	Art Unit
	Chuong Ho	2664

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____ .

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-25* is/are pending in the application.

   4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *10-16* is/are allowed.

6)☒ Claim(s) *1-9 and 17-25* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

   Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

   Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
   a)☐ All b)☐ Some * c)☐ None of:
      1.☐ Certified copies of the priority documents have been received.
      2.☐ Certified copies of the priority documents have been received in Application No. _____ .
      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
   * See the attached detailed Office action for a list of the certified copies not received.

13)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
   a) ☐ The translation of the foreign language provisional application has been received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .

4)☐ Interview Summary (PTO-413) Paper No(s). _____ .

5)☐ Notice of Informal Patent Application (PTO-152)

6)☐ Other: .

1.   Claims 1-25 are pending.

Claim Rejections - 35 USC § 103

2.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth
> in section 102 of this title, if the differences between the subject matter sought to be patented and the prior
> art are such that the subject matter as a whole would have been obvious at the time the invention was made
> to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be
> negatived by the manner in which the invention was made.

3.   Claims 1-4, 8-9, 17-20, 24-25 are rejected under 35 U.S.C. 103(a) as being unpatentable

over Giroux et al. (U.S.Patent No. 6,317,416 B1) in view of Chin et al. (U.S.Patent No.

6,314,110 B1).

In the claim 1, Giroux et al. discloses fair queue servicing at a queuing point in a multi-

service class packet switched network, incoming packet are received in buffers (per flow

queues), and outgoing packets are scheduled by a weighted fair queue (weighted bandwidth

utilization) scheduler (see abstract); comprising:

♦   accepting data from a plurality of local input flows (1'....1n) at an MPS (packet switched

        network 1), each local input flow having a corresponding QoS (quality of service) (see

        col. 1, lines 18-22, lines 58-60, lines 65-67, col. 2, lines 1-3, lines 60-67, lines 14-17);

♦   queuing the data from the local input flows with plurality of per flow queues (buffers),

        wherein each local input flow has a respective one of the per flow queues (see col. 1, lines

        18-22, lines 58-60, lines 65-67, col. 2, lines 1-3, lines 60-67, lines 14-17);

♦   maintaining a tract of a flow rate of each local input rate using a corresponding virtual

queue (see col. 2, lines 14-17, a weighted fair queue controller, and buffer means for

receiving incoming packets in queues, characterized in that further comprising means for

monitoring buffer usage for each queue, means for determining the bandwidth

requirements of each class or service, and service weights manager for dynamically

modifying the weights of weighted fair queuing controller in response to buffer usage and

bandwidth requirements);

♦   the bandwidth of the communication channel is allocated in according with the QoS of

each local input flow (see col. 1, lines 18-22, lines 58-60, lines 65-67, col. 2, lines 1-3,

lines 60-67, lines 14-17); the QoS to determine the rate of transmission from the per flow

queue (buffers) to the communication channel to implement a weighted bandwidth

utilization (see col. 1, lines 18-22, lines 58-60, lines 65-67, col. 2, lines 1-3, lines 60-67,

lines 14-17);

However, Giroux et al. is silent to disclosing in a metropolitan area network, a method for

implement weighted fair flow control on the network.

Chin et al. discloses allowing nodes (switches) on a bi-directional ring network to access

the ring network in fair manner without an a priori assignment of a quota to each node (switche)

(see col. 3, lines 15-17); the allocated bandwidth for a node (switche) that is using too much

bandwidth is decreased toward the minimum available dowstream bandwidth until that node

(switch) is using the same amount of bandwidth as dowstream nodes (switches) (see col. 3, lines 30-37); comprising:

♦ in a metropolitan area network, a method for implement weighted fair flow control on the network (see col. 3, lines 30-37, lines 60-67);

♦ transmitting data from the local input flows (nodes or switches) across a communication channels of the network (see col. 3, lines 30-37, lines 60-67);

♦ queuing the data from the local input flow with plurality of per flow queue (buffer), wherein each local input flow has a respective one of the per flow queues (see col. 10, lines 13-18).

Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the system of Giroux et al. with the teaching of Chin to provide in a metropolitan area network, a method for implement weighted fair flow control on the network in order to fairly allocate bandwidth for a network nodes (switches) configured to send and receive packet in an upstream direction and a dowstream direction. Therefore, the combined system would been enable to reallocate unused bandwidth to different switches.

4. In the claims 2, 18, Chin discloses allocating the bandwidth of the communication channel by throttling the rate at which data is transmitted from an upstream (see col. 7, lines 59-62, col. 3, lines 60-67) MPS (switch node) with respect to the rate at which data is transmitted from a downstream MPS to implement a fair bandwidth utilization of the communication channel (see col. 7, lines 59-62, col. 3, lines 60-67).

5.   In the claims 3, 19, Giroux et al. discloses coordinating the rate at which data is

transmitted from the respective per flow queues (buffers) of the MPS (switch node) to the

communication channel to maintain the respective corresponding QoS, the coordinating

performing by a scheduler (weighted fair queuing controller, see figure 2) within the MPS

(switch node) (see col. 1, lines 18-22, lines 58-60, lines 65-67, col. 2, lines 1-3, lines 60-67, lines

14-17).

6.   In the claims 4, 20, Giroux et al. discloses the QoS includes at least at first level and a

second level, the first level having a higher priority than the second level (see the priority table,

col. 2, lines 60-67).

7.   In the claims 8, 24, Chin discloses the communication channels is an ethernet

communication channel (see col. 3, lines 15-25).

8.   In the claims 9, 25, Chin discloses the metropolitan area network is an ring topology

metropolitan area network (see col. 3, lines 15-25).

9.   In the claim 17, Giroux et al. discloses fair queue servicing at a queuing point in a multi-

service class packet switched network, incoming packet are received in buffers (per flow

queues), and outgoing packets are scheduled by a weighted fair queue (weighted bandwidth

utilization) scheduler (see abstract); comprising:

♦   accepting data from a plurality of local input flows (1'....1n) at an MPS (packet switched

       network 1), each local input flow having a corresponding QoS (quality of service) (see

       col. 1, lines 18-22, lines 58-60, lines 65-67, col. 2, lines 1-3, lines 60-67, lines 14-17);

♦   queuing the data from the local input flows with plurality of per flow queues (buffers),

wherein each local input flow has a respective one of the per flow queues (see col. 1, lines

18-22, lines 58-60, lines 65-67, col. 2, lines 1-3, lines 60-67, lines 14-17);

♦   maintaining a tract of a flow rate of each local input rate using a corresponding virtual

queue (see col. 2, lines 14-17, a weighted fair queue controller, and buffer means for

receiving incoming packets in queues, characterized in that further comprising means for

monitoring buffer usage for each queue, means for determining the bandwidth

requirements of each class or service, and service weights manager for dynamically

modifying the weights of weighted fair queuing controller in response to buffer usage and

bandwidth requirements);

♦   the bandwidth of the communication channel is allocated in according with the QoS of

each local input flow (see col. 1, lines 18-22, lines 58-60, lines 65-67, col. 2, lines 1-3,

lines 60-67, lines 14-17); the QoS to determine the rate of transmission from the per flow

queue (buffers) to the communication channel to implement a weighted bandwidth

utilization (see col. 1, lines 18-22, lines 58-60, lines 65-67, col. 2, lines 1-3, lines 60-67,

lines 14-17);

However, Giroux et al. is silent to disclosing in a metropolitan area network, a method for

implement weighted fair flow control on the network.

Chin et al. discloses allowing nodes (switches) on a bi-directional ring network to access

the ring network in fair manner without an a priori assignment of a quota to each node (switche)

(see col. 3, lines 15-17); the allocated bandwidth for a node (switche) that is using too much

bandwidth is decreased toward the minimum available dowstream bandwidth until that node

(switch) is using the same amount of bandwidth as dowstream nodes (switches) (see col. 3, lines

30-37); comprising:

♦   in a metropolitan area network, a method for implement weighted fair flow control on

         the network (see col. 3, lines 30-37, lines 60-67);

♦   transmitting data from the local input flows (nodes or switches) across a communication

         channels of the network (see col. 3, lines 30-37, lines 60-67);

♦   queuing the data from the local input flow with plurality of per flow queue (buffer),

         wherein each local input flow has a respective one of the per flow queues (see col. 10,

         lines 13-18).

Thus, it would have been obvious to one of ordinary skill in the art at the time of the

invention to modify the system of Giroux et al. with the teaching of Chin to provide in a

metropolitan area network, a method for implement weighted fair flow control on the network in

order to fairly allocate bandwidth for a network nodes (switches) configured to send and receive

packet in an upstream direction and a dowstream direction. Therefore, the combined system

would been enable to reallocate unused bandwidth to different switches.

10.   Claims 5, 6, 7, 21, 22, 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over

the combined system (Giroux - Chin) in view of Yin (U.S.Patent No. 6,219,728 B1).

In the claims 5, 21, the combined system discloses the limitations of claim 1 above.

However, the combined system (Giroux - Chin) is silent to disclosing monitoring QoS compliance of the local input flows by monitoring the dept of the virtual queues.

Yin discloses a threshold value is generated for each queue indicating a maximum amount of data to be stored in the associated queue. Threshold values are updated in response to changes in the number of available memory buffers (see abstract); comprising:

♦   monitoring QoS compliance of the local input flows by monitoring the depth (threshold) of the virtual queues (see col. 4, lines 57-60).

Thus, it would have been obvious to one of the ordinary skill in the art at the time of the invention to modify the combined system (Giroux - Chin) with the teaching of Yin to monitor QoS compliance of the local input flows by monitoring the depth (threshold) of the virtual queues in order to fairly share the memory resource if several computer users are active the same time. Moreover, the combined system would have been enable to prevent overload the memory resource.

11.   In the claims 6, 22, Yin discloses monitoring the dept of the virtual queues wherein each of the virtual queues keeps track of a backlog of the corresponding local input flow without physically buffering the local input flow (see col. 5, lines 10-15, lines 23-27, lines 34-37, lines 48-49, lines 52-55, col. 6, lines 26-40).

12.   In the claims 7, 23, Yin discloses a backlogged virtual queue indicates the corresponding local input flow (buffer) exceeds an allowed rate (see col. 5, lines 10-15, lines 23-27, lines 34-37, lines 48-49, lines 52-55, col. 6, lines 26-40).

Allowable Subject Matter

13.   Claims 10-16 are allowed.

14.   The following is an examiner's statement of reasons for allowance: the prior art (6317416, 6314110, 6219728, 6452933) of record does not appear to teach or render obvious the claimed limitations in combination with the specific added limitations, as recited from independent claim 10: c) for each MPS: c4) if the inserting traffic needs to be reduced, reducing the allocation to those local input flows having a lower QoS before reducing the allocation to those local input flows having a higher QoS.

        Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."
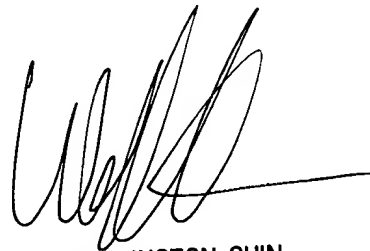
Conclusion

15.   Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chuong Ho whose telephone number is (703)306-4529. The examiner can normally be reached on Monday-Friday from 9am to 3pm.

16.   If attempt to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wellington, Chin, can be reached on (703)305-4366.

Any inquiry of a general nature or relating to the status of this application or proceeding

should be direct to the group receptionist whose telephone number is (703) 305-3900.

CH

Date 01-09-04

WELLINGTON CHIN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600